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ABSTRACT

A study at Crowder College (Missouri) found that clustering within majors may prove helpful in evaluating and implementing long-range planning for student retention and academic success. The study, which included nursing, athletics, and Environmental Resource Center (ERC) students, identified factors aiding academic success: demonstrative goals, encouragement towards graduation, groups working collaboratively, a "family unit" concept, shared classroom and training experiences, a network for alleviating transitional trauma, rigorous standards and routines, and obtainable and worthwhile rewards at the conclusion of their college programs. Most students entered the programs with average academic backgrounds, continued with a solid academic performance, and successfully graduated or received certification. Results from a participant survey indicated they were pleased with their Crowder education, with nursing and athletics students providing more positive answers than those in ERC. This discrepancy may be attributed to the fact that ERC students are not as cohesive and involved with each other as the athletes and nurses. Nevertheless, a control group of random students displayed poor performance and an extremely high attrition rate compared with the experimental clustered groups--a difference that supports the premise that greater cohesion among students promotes greater academic success. (YKH)

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A CRITIQUE OF CLUSTERING TECHNIQUES AMONG MAJORS IN COLLEGE PROGRAMS

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Assurances to: parents, students, legislators, or college administrators that matriculating students will eventually graduate, would be exceedingly difficult to portend. Regardless of school or incoming students' abilities, explaining attrition rates in higher education to laypersons is usually an awkward task. Even at elite private schools, graduation rates do not reflect what the general public probably assumes to be the case.

However, there are some arenas within academia that experience unusually high retention and graduation rates. We believe there are crucial elements that contribute to the success stories and they will be highlighted in this paper.

This publication is not meant to be empirical from the stand point of pure research. A number of factors have been examined; we intend to highlight their significance. The underlying variables of the programs have been instrumental in producing exemplary results over a number of years. Their relationship in augmenting the needs and expectations of students toward graduation will be detailed.

We will feature three unique groups of students. The groups vary not only by major, but also in composition: traditional and nontraditional students- each distinct. We believe virtually every type of background could easily be represented in any of the clusters of students. It is our desire to showcase the uniqueness of assembling quality faculty and program components that meet the intrinsic needs of students. The salient essentials that are requisite to sustain students to graduation are embedded in the educational programs as chronicled.

Among those instrumental factors aiding success are: demonstrative goals, encouragement towards graduation, groups working collaboratively, a "family" unit concept, shared classroom and training experiences, an established network for participants lessening transitionary trauma to the college atmosphere, demanding and rigorous standards and routines, obtainable and worthwhile rewards at the conclusion of their Crowder program.

The three programs to be examined are: Associate degree R.N. program, Environmental Resource Center school, and sports programs comprising men's baseball, women's softball, and basketball. Each program is made up of students, as indicated earlier, from divergent backgrounds.

Most of the students come to Crowder with average track records, academically. Yes, we have our share of stellar incoming students; however, on average, they are solid but not superior students. From here, you will be shown lists accentuating and comparing / contrasting Crowder students as they came to us and how they complete with us. Additionally, an administered survey relates the key significant variables that we assert contributed to Crowder's admirable results. All will be discussed throughout the discourse of the paper.

The most impressive factor is the retention rates of students on through to graduation.

Review of rates of graduation and / or certification exam passage.

Nursing	93.7%	(pass rate on 1994-97 NCLEX *State Boards*)
Athletics	88%	(graduation rate over the years 1987-1996)
ERC	90.03%	(pass rate on certification exams 1991-1996)

The above figures involved approximately 731 students. However, the above figures need to be adjusted. For instance, the nurse pass rate is only for first attempts. Upon second attempts, the figure hovers closer to 97-99% for eventual passage of State Boards. Observers might note that Nursing and ERC pass rates are not the equivalent of graduation rates. The Nursing program only loses a student or two per class (two years). Comparable results occur with the ERC.

Similarly, the ERC yields higher percentages upon factoring in retakes. Athletics, too, has some extraneous issues needing explanation. The average number of classroom credit hours among athletes who do not graduate is 58.96. These individuals need slightly more than 1 credit hour (generally less than one class) to graduate. Unfortunately, transfer institutions have often advised athletes to forego pursuing their associate degree and /or transferring the 1.04 credit hours back to Crowder in order to receive Crowder's Associate degree.

College and High School collective G.P.A.'s are as follows:

	High school	**College**	
Nursing	2.78	3.3	
Basketball	3.6	3.3	
Softball	3.1	3.4	
Baseball	2.9	2.9	
ERC	2.86	2.76	
	2.97	3.13	avg. G.P.A.

Individuals came to the program, in aggregate, as fairly solid students. And after two years of rigorous curriculum and time-intensive associated performances, they leave on firm academic footing and continue on in professional disciplines.

High School class rankings are as follows:

Nursing	top 37.52%
Basketball	top 14%
Softball	top 16.5%
Baseball	top 38%
ERC	top 45%

avg. graduated in top third, 30.2%, of class

Entry ACT scores

	English	Math	Reading	Science	Composite
Nursing	21.2	17.5	22	20.6	20.6
Basketball	21.5	19.8	19.25	19.8	20.5
Softball	19	19	20	21	20
Baseball	16.6	18.4	17.4	19.4	17.9
ERC	18	19	20.5	22.5	20
Totals	19.26	18.74	19.83	20.66	19.8

High School and College grades in Core Classes. (based on 4.0 scale)

	High School			College		
	Eng.	Math	Science	Eng.	Math	Science
Nursing	2.72	2.48	2.64	3.63	3.4	3.55 **
Basketball	3.5	3.5	3.2	3.14	2.9	3.0
Softball	3.0	2.5	2.75	3.0	2.8	3.2
Baseball	2.6	2.5	2.9	2.8	3.2	2.75
ERC	2.8	2.3	2.3	2.8	3.2	2.9
Averages	2.92	2.66	2.76	3.1	3.12	3.1

The above three categories accentuate our assertion that incoming students are solid academically and continue to do so, leading, on to completion of studies at Crowder, and then, often further. ** Nursing students are critiqued on a more rigorous grading scale. For example, an minimum "A" grade is 93-94%, not just 90%+ which is typical in many collegiate classes.

The students were also surveyed. The survey entitled: *Success Interview* solicited student's responses to thirteen propositions. They used the following Likert scale:

A= very true, B= true, C= usually true, D=seldom true, E= never true

The inquiries and responses will be gleaned one at a time in percentages.
For example, In the first proposition 87% of the nursing students indicated "very true" or **"A."** All other figures are in percentages also!

Proposition 1.
I will have accomplished a major goal by graduating from Crowder.

	A	B	C	D	E
Nurses	87%	13	0	0	0
Athletes	35	61	4	0	0
ERC	62	25	0	0	12

Proposition 2.
The teachers / leaders of the major / team I'm associated with encourage us toward graduation.

	A	B	C	D	E
Nurses	83%	17	0	0	0
Athletes	61	26	4	9	0
ERC	38	37	12	12	0

Proposition 3.
Working closely as a unit with the same persons on a regular basis has introduced me to close friendships.

	A	B	C	D	E
Nurses	52%	22	22	4	0
Athletes	78	11	4	9	0
ERC	0	25	37	37	0

Proposition 4.
The regular class exercises / practices contribute to the feeling of my being part of a "family".

	A	B	C	D	E
Nurses	48%	30	22	0	0
Athletes	57	22	13	9	0
ERC	0	12	25	50	12

Proposition 5.
Having the regular availability of fellow team / class members to study with and share classroom / training experiences with makes my education easier attained and more enjoyable.

	A	B	C	D	E
Nurses	39%	39	22	0	0
Athletes	52	35	9	4	0
ERC	0	25	50	12	12

Proposition 6.
I would probably be less enthusiastic toward school if I were "going it alone."

	A	B	C	D	E
Nurses	22%	43	22	4	9
Athletes	39	43	9	0	9
ERC	12	0	25	50	12

Proposition 7.
My experiences thus far at Crowder have helped me attain a level of achievement that otherwise would have been difficult to attain on my own.

	A	B	C	D	E
Nurses	26%	39	30	0	0
Athletes	13	39	43	0	4
ERC	12	38	12	37	0

Proposition 8.
My transition to college / new surroundings has been less difficult due to the network of players/classmates around me.

	A	B	C	D	E
Nurses	26%	35	26	4	9
Athletes	26	43	9	13	9
ERC	0	12	25	37	25

Proposition 9.
Those who I am in close contact with at Crowder and regularly associate with would have similar feelings to mine on this survey.

	A	B	C	D	E
Nurses	39%	30	26	0	4
Athletes	35	48	17	0	0
ERC	12	37	25	25	0

Proposition 10.
I'm confident the rewards I'm expecting will be significant upon my graduating from Crowder.

	A	B	C	D	E
Nurses	43%	43	13	0	0
Athletes	26	70	4	0	0
ERC	0	75	0	25	0

Proposition 11.
Overall, I'd highly recommend Crowder to others.

	A	B	C	D	E
Nurses	65%	30	4	0	0
Athletes	43	39	13	0	0
ERC	12	62	12	12	0

Proposition 12.
Overall, while the program I'm in is demanding and rigorous, I'd estimate those who are administering the program genuinely care about me and others in the program.

	A	B	C	D	E
Nurses	43%	52	4	0	0
Athletes	52	39	4	0	0
ERC	12	37	25	12	12

Proposition 13.
When I'll look back at my Crowder years, I'll have fond memories.

	A	B	C	D	E
Nurses	57%	30	13	0	0
Athletes	57	39	4	0	0
ERC	0	50	25	12	12

SURVEY SUMMARIES

For the **Nursing** students, the following patterns were yielded:

Total response <u>averages</u> for the five category selections.

A= 48.5% very true
B= 32.5% true
C= 15.7% usually true
D= .9% seldom true
E= 1.7% never true

The **Nursing** students generated 299 possible responses. Of these:

A, B, and C are all favorable answers. These comprise 96.7% of the responses.

A, and B are very favorable answers. These comprise 81% of the responses.

D, and E are unfavorable answers. These comprise 2.6% of the responses.

For the student **Athletes,** the following patterns were yielded:

Total response averages for the five category selections.

A= 44.15% very true
B= 39.6% true
C= 10.5% usually true
D= 3.4% seldom true
E= 1.7% never true

The student **Athletes** generated 299 possible responses. Of these:

A, B, and C are all favorable answers. These comprise 93.71% of the responses.

A, and B are very favorable answers. These comprise 83.21% of the responses.

D, and E are unfavorable answers. These comprise 5.1% of the responses.

For the **ERC** students, the following patterns were yielded:

Total response averages for the five category selections.

A= 12.3% very true
B= 33.5% true
C= 21.0% usually true
D= 25.0% seldom true
E= 7.5% never true

The **ERC** students generated 104 possible responses. Of these:

A, B, and C are all favorable answers. These comprise 66.8% of the responses.

A, and B are very favorable answers. These comprise 45.8% of the responses.

D, and E are unfavorable answers. These comprise 32.5% of the responses.

OVERALL SURVEY RESULTS

For the **ALL** STUDENTS taking the survey the following patterns were yielded.

Total response averages for the five category selections.

A= 40.9% very true
B= 34.9% true
C= 14.3% usually true
D= 5.4% seldom true
E= 2.3% never true

The students generated 702 possible responses. Of these:

A, B, and C are all favorable answers. These comprise **90.1%** of the responses.

A, and B are very favorable answers. These comprise **75.8%** of the responses.

D, and E are unfavorable answers. These comprise **7.7%** of the responses.

DISCUSSION

Some initial comments must be made. The ERC students are not, by the nature of their program, as involved as an academic group with each other as the student athletes or nurses are amongst themselves. Hence, they are slightly less cohesive.

They might be described as an "in between" group. They progress through their program classes in a cluster; however, it is not as close knit as the other two groups. Yet, they have a unity beyond the average students in any other given classroom setting. Exceptions might be those in an EMT course, Transport Training, or phlebotomy class. All of which are for a short duration (semester or less).

Actually, their status as an "in between" group lends support to the premise the study maintains. That is, less cohesion tends toward more unsatisfactory rates of academic success and vice versa. Additionally, the ERC students may actually never be mainstreamed (no derogatory analogy intended) with rest of the Crowder college culture. This occurs because an ERC degree may not include general core classes. The ERC A.A. degree does, but the others require far less than 42 hrs of general education. Consequently, ERC students can be on campus, yet their classes may be held for the most part in the Water school.

Admittedly, the study was not designed to derive "levels of significance." It is apparent from the results that when **90.1%** provide a positive acknowledgment (very true, true, usually true) and **75.8%** acquiesce to (very true and true) that substantial and unmistakably beneficial interventions and personnel deserve credit throughout the teaching spectrum.

To further accentuate the benefits of altruistic academic strategies, a type of control group was used to draw comparisons. Twenty-three persons were sampled arbitrarily from the Crowder data records. Fifteen females and eight males ended up being selected. The individuals randomly chosen were not administered the survey due to their unavailability. Additionally, the questions wouldn't have pertained to them because of the nature of the questions. The control group does provide a contrast in the academic areas and serves to exemplify the study's intention.

The average High School G.P.A. of the control group is **2.9**

The average High school class ranking is in the upper **37.4%**

The average High School grades are reflected below: (based on a 4 pt. scale)

English	**2.82**
Math	**2.68**
Science	**2.64**
Average	**2.71**

The average ACT scores (15 of 23 possessed them) were:

English	**19**
Math	**18.1**
Reading	**21.4**
Science	**19**
Composite	**19.4**

Of the 23, eleven or 48% indicated at the time of entry to Crowder that their goal was "degree seeking."

Of the 23, twelve or 52% indicated their goal upon entry to be "selected courses."

Six of the 23 or 26% went on to receive a degree at Crowder.

Of the eleven original degree seeking students, two received a Crowder degree or 18%.

The four other degrees awarded by Crowder came from students who had originally indicated their goal to be "selected courses." Consequently, of the twelve who indicated "selected courses," four or 25% went on to receive degrees.

The college G.P.A. of the fifteen people who competed any class credit hours at Crowder and did so successfully is: **3.06**

The college G.P.A. of the six individuals receiving degrees at Crowder is: **3.39**

The college G.P.A. of the nine individuals (non-degree receiving) who took any class credit hours at Crowder and did so successfully is: **3.15**

Eight individuals or 35% of 23 who applied to Crowder did not ever actually enroll, received all "F's", "W's", and "I's" or basically totally withdrew from classes. None of those eight have returned to be current students at Crowder.

The NCAA Division I, II, III Graduation-Rates Report published annually on an institution-specific basis data summaries for prospective students. Listed below are a selection of sampled schools (1996) along with Crowder College. Graduation rates data exhibited provides a comparison to further elucidate our position, especially as concerning athletes.

COLLEGE Sampling	DIVISION Class	ALL STUDENTS Grad. Rate	STUDENT-ATHLETES Grad. Rate
Stanford	I	93%	84%
Oklahoma State U.	I	47%	40%
Arkansas U. Fayette.	I	41%	41%
Baylor Univ.	I	71%	58%
Citadel	I	70%	78%
Drake Univ.	I	64%	58%
Kansas The Univ.	I	56%	55%
Marquette Univ.	I	75%	72%
Missouri Univ. Columbia	**I**	**40%**	**46%**
Purdue Univ.	I	70%	63%
Division I **All** Institutions	(305)	56%	58%
Division I **All** Public	(202)	53%	54%
Division I **All** Private	(103)	69%	69%*

1996 NCAA DIVISION II & III PERSISTENCE RATES

Division II

Drury College	**II**	**62%**	**52%**
Hillsdale College	II	61%	60%
Lincoln U. Mo.	**II**	**22%**	**58%**
Missouri U. Rolla	**II**	**55%**	**70%**
MSSC	**II**	**34%**	**39%**
Southwest Baptist U.	**II**	**27%**	**31%**
Pittsburg State U.	II	58%	48%
Washburn U.	II	52%	52%
Division II **All** Institutions	(257)	44%	50%
Division II **All** Public	(151)	42%	47%
Division II **All** Private	(106)	49%	54%

Division III

Clarkson U.	III	67%	75%
Hartwick College	III	62%	50%
Johns Hopkins U.	III	87%	67%
Wilkes U.	III	51%	43%
Division III **All** Institutions	(376)	60%	75%
Division III **All** Public	(72)	51%	unavailable
Division III **All** Private	(304)	63%	75%
Crowder College C.C.		**53% *****	**88%**

*** **Denotes** The NCAA Rates Reports indicate their data is for "Full-Time Degree-seeking Students" none others. Crowder's Student Right-To-Know includes others besides "degree-seeking." Consequently, our graduation percentage would be higher in all probability if we dismissed from the aggregate "selected courses only" category students.

Crowder College's student athletes have a higher rate of graduation than all the above sampled institutions in aggregate or individually. On average, regardless of division size, student athletes in general out perform (in one instance a tie *) their peers or regular cohorts. Again, this lends credence to the assertion about student units which work cohesively and their eventual academic successes.

Crowder College's "all students" category out performs all public institutions in every category (exception- a tie with division I) in aggregate. While this entire overview of information concentrated only on a few aspects, hypotheses could be formulated that parallel the basic premise of the study. Mainly, a small rural community college that attempts, in mission statement and practice, to exude a "family" atmosphere could expect that underlying principles of cohesion would apply not only in "total" but, in individual programs as shown.

The categories of: nursing, athletic, and ERC students graduate in a time span close to two years, many other students take longer. It could be postulated that the students who are not more prone to "stop-out" will proceed on to negotiate further academic studies and goals with success.

To exemplify the continuing of education aspect, the following numbers are self explanatory. The 1997 men's Baseball Media Guide lists the transfer institutions for over 250 former Crowder student-athletes. The Lady Riders Media Guide, likewise, lists over 100 success stories of individuals furthering their educational pursuits. The Women's Basketball Media Guide portrays, too, the same track record of academic pursuit to the four-year educational institution.

On a similar vein, the nursing students, almost without exception, have secured professional positions as nurses prior to commencement yet, contingent on graduation.

SUMMARY DISCUSSION

In general, we believe we have provided ample criteria to support our initial contentions. Assuredly, many if not all of the 23 individuals in the "control group" could have graduated from Crowder (provided that was their aim) and continued on if they were integrated into a "micro-academic" setting compatible with their chosen major of study. That is, a fairly organized assembly of individuals with a common academic interest that is pursued collectively as a unit to graduation.

As shown, the students comprising the control group have the high school academic credentials to succeed. Their high school preparation is comparable to their peers in the study.

Although it is possible to investigate further, the question arises: Do students chose to describe themselves on the Crowder admission application as "selected courses only" because it is an accurate description of their academic goal upon matriculating? Or, is that category selected so that they do not have to make an initial full commitment and risk failure? These questions, in turn, give rise to further inquiries.

Clusters of individuals not only collaborate, but learn to rely on one another. Many go further into the process and develop lasting friendships. Accountability not only to one's own commitments, but to those of the group produce responsibilities that for the most part are never critiqued or transcribed on to a transcript. However, those lessons are pivotal in their eventual successes. Issues such as: camaraderie, team exercises, competition and collaboration in balance, goal setting, etc. have nurtured and complimented the academic emphasis.

Other academic disciplines might experiment to ascertain the applicability of blocking segments of their curriculums in semester movements. Many of the general education core requirements are universally required among all majors pursuing the A.A. degree. Consequently, they would serve useful as classes that could be cloistered together. Upon successful experimentation, clustering of students and classes may be a worthwhile area of interest for some programs to further investigate and incrementally implement in long-range planning.